

Amendment and Response
Applicant: E. Scott Ilagermoser
Serial No.: 10/658,490
Filed: September 8, 2003
Docket No.: 59004US002

Title: VEHICLE TOUCH INPUT DEVICE AND METHODS OF MAKING SAME

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REMARKS

These remarks are responsive to the Non-Final Office Action mailed October 6, 2006. In that Office Action, claim 12 was rejected under 35 U.S.C. § 112, first paragraph, and claims 1-23 and 27-35 were rejected under 35 U.S.C. § 103(a) as unpatentable over Neuman, U.S. Patent No. 5,942,815 ("Neuman") and Pryor, U.S. Patent No. 7,084,859 ("Pryor"), and further in view of Tam, U.S. Patent No. 5,825,351 ("Tam").

With this Response, claim 12 has been amended, and claims 36-37 are newly presented. Claims 1-37 remain pending in the application and are presented for consideration and allowance.

Claim Rejections under 35 U.S.C. § 112

Claim 12 was rejected under 35 U.S.C. § 112, first paragraph.

With this Response, claim 12 has been amended to provide the touch input device of claim 5, further comprising at least one discrete capacitive touch sensor button disposed within a spoke of the steering wheel.

It is respectfully submitted that amended claim 12 complies with the enablement requirement of 35 U.S.C. § 112, first paragraph, and is in accord with the guidance provided by the Examiner at page 3 of the Office Action. Based on this reasoning, it is respectfully requested that the rejection to claim 12 under 35 U.S.C. § 112, first paragraph, be withdrawn.

Claim Rejections under 35 U.S.C. § 103

Claims 1-23 and 27-35 were rejected under 35 U.S.C. § 103(a) as unpatentable over Neuman and Pryor, and further in view of Tam.

Neuman is cited for disclosing (Figure 7) a steering wheel hub 606 including a flexible capacitor 102 disposed between a cover 702 and an airbag 704. In this regard, Neuman discloses a conventionally activated switch placed under cover 702.

Pryor discloses a touch screen display 105 and other man-machine interfaces (Title) for vehicle instrumentation. Tam discloses a touch sensitive capacitive coupling input pad 105 that includes a stylus to control cursor 107 movements on a display device.

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The Examiner takes the position that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the steering wheel disclosed in Neuman with the touch sensor disclosed in Pryor, and to modify the combination according to the capacitive touch sensor disclosed in Tam. Applicants respectfully disagree.

It is respectfully asserted that a *prima facie* case of obviousness has not been established. In particular, Pryor discloses stylistically attractive (Abstract) interactive viewing screens 105 that are configured for viewing by, and for touch interaction with, a driver 111 (See Figure 1d). Pryor expressly discloses at column 7, lines 56-66 that the touch screen displays "in the form useable here" are generally based on the use of one or more TV cameras for viewing optically discernable data associated with screen 105, and for enabling a determination of a location of touch points on the screen 105. Thus, Pryor discloses touch screens that are, of necessity, visible to the driver 111.

A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 U.S.P.Q. 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984) (emphasis in the original). When considered in their entirety, Neuman requires a switch disposed beneath a cover of an airbag, and Pryor requires a touch screen that is visible to a user. Consequently, one of skill in the art would have no reason to modify the steering wheel of Neuman to include the viewing/touch screen of Pryor since doing so would prevent the touch screen of Pryor from being visible, thus rendering the Pryor screen unsatisfactory for its intended use as a display screen.

The Examiner cites to Pryor at column 7, lines 26-30 in which Pryor discloses: "[T]he invention is also unique among touch screens, as it allows the touch screen to coexist so to speak, with an airbag. This in-turn may allow novel location of the invention in the steering wheel." The Examiner also cites to Pryor at column 17, lines 14-17 in which Pryor discloses: "[T]he portion 106 of the screen 105 is reserved for touch screen inputs for example using resistive, capacitive or other means such as my distortion based types." With specific reference to the portions of Pryor cited by the Examiner, Applicants believe that a *prima facie* case of obviousness cannot be established over the cited references since the combination of the Pryor

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screen 105 with the cover 702 and airbag 704 of Neuman would necessarily locate the portion 106 of the screen 105 reserved for touch screen inputs disclosed by Pryor between the cover 702 and the airbag 704 in Neuman. This purported combination cannot be said to have a reasonable expectation of success since the cover 702 would preclude access to the portion 106 of the screen 105 reserved for touch screen inputs. A *prima facie* case of obviousness cannot be established absent a reasonable expectation of success in combining the cited references.

Moreover, the Examiner's position at page 4 fails to account for all limitations of independent claim 1. The Examiner concedes that Neuman fails to teach or suggest a touch input device configured to allow capacitive coupling between a touch and a touch sensor. The Examiner concludes midway down page 4 that:

It would have been obvious to one of ordinary skill in the art at the time of the invention to adopt Pryor's idea of implementing a capacitor touch sensor in a steering wheel, in Neuman's input device, thus to implement a capacitive touch sensor between Neuman's cover layer and airbag, in order to provide an instrument panel on Neuman's steering wheel allowing the occupant of the vehicle including the steering [wheel] to read and comprehend vehicle control commands easily [col. 8, line 24- col. 9, line 46].

However, even if the purported combinations are made, the resulting device fails to teach or suggest a capacitive touch sensor configured to allow **capacitive coupling between a touch and the touch sensor through the airbag cover**, as required by independent claim 1; or disposing a capacitive touch sensor on a back surface of the airbag cover, the touch sensor configured to allow **capacitive coupling between a touch and the touch sensor through the airbag cover**, as required by independent claim 23; or a capacitive touch sensor disposed behind a surface in a vehicle that is assessable and touchable by an occupant in the vehicle, where the touch sensor is configured so that a touch to a designated area of the surface allows **capacitive coupling between the touch and the touch sensor through the surface**, as required by independent claim 28.

Since the cited references, alone or in combination, fail to teach or suggest all limitations of the independent claims, it is respectfully asserted that a *prima facie* case of obviousness has not been established.

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Based upon all of the above arguments, it is respectfully requested that the rejections to claims 1-23 and 27-45 under 35 U.S.C. § 103(a) as unpatentable over Neuman and Pryor, and further in view of Tam be withdrawn.

With regard to claims 5 and 7, the Examiner concedes that Neuman does not disclose a steering wheel incorporating additional touch sensors, and concludes that such additional sensors are a mere duplication of parts. Applicants respectfully disagree.

Each of the dependent claims, including claims 5 and 7, also requires that the touch sensor is configured so that a touch to a designated area of a surface of the airbag cover allows capacitive coupling between the touch and the touch sensor through the airbag cover. The cited references, alone or in combination, fail to teach or suggest at least this patentably distinct limitation of the pending independent claims. As such, the dependent claims, including claims 5 and 7, cannot be rendered obvious over the cited references as a mere duplication of parts.

With regard to claims 10 and 11, the Examiner concedes that Neuman does not disclose a capacitive touch sensor including a quadrant segmented sensor or a scroll bar sensor, but concludes that such sensors are an obvious matter of design choice since Applicants do not disclose an advantage of such sensors. Applicants respectfully disagree.

The Specification at page 4, line 16 through page 5, line 23 and at page 7, lines 10-15 provides an express teaching for the advantages of the quadrant segmented sensor of claim 10 and the scroll bar sensor of claim 11. It is respectfully submitted that the dependent claims, including claims 10 and 11, further define patentably distinct independent claim 1 and are not rendered obvious over the cited references.

Claims 24, 25 and 26 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Neuman, Pryor, and Tam as applied to claims 1-23 and 27-35 above, and further in view of Reighard et al., U.S. Patent No. 5,423,569 ("Reighard"). Applicants disagree.

Reighard is directed to a piezoelectric switch that is wholly internally activated. The Reighard switch, in a manner similar to the Neuman switch, incorporates all of the components needed to activate the switch. In contrast, independent claim 23 requires disposing a capacitive touch sensor on a back surface of the airbag cover opposing a finished surface, the touch sensor configured so that a touch to a designated area of the finished surface allows capacitive

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coupling between the touch and the touch sensor through the airbag cover. Thus, claim 23 recites limitations that require the touch to the designated area of the finished surface to be part of the "switch." Consequently, Reighard adds nothing to cure all of the deficiencies noted above for the cited combination of Neuman, Pryor, and Tam.

Applicants therefore submit that a *prima facie* case of obviousness has not been stated for claims 24-26, and request consideration and withdrawal of the rejections to these claims under 35 U.S.C. § 103(a) as unpatentable over Neuman, Pryor, and Tam, and further in view of Reighard.

Claims 36 and 37 are newly presented. Claims 36 further defines patentably distinct independent claim 1 and requires the capacitive touch sensor is an off-display capacitive touch sensor characterized by an absence of a display screen. Claim 37 further defines patentably distinct independent claim 28 and requires a capacitive touch sensor disposed behind a surface in a vehicle, where the surface is not a display screen.

Support for the language of newly presented claims 36 and 37 is located throughout the Specification, including at least at page 4 beginning at line 16 through page 6, line 17; and at least in figures 2A through 5B.

The purported combination of the cited references results in a device that requires a display screen, either in the form of the man-machine interface screen 105 of Pryor or display screen 105 in Tam. Consequently, it is respectfully submitted that the cited references, alone or in combination, fail to teach or suggest the additional patentably distinct limitations recited by newly presented claims 36 and 37.

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Conclusion

Applicants submit that claims 1-37 are in condition for allowance, and request early indication of the same.

Respectfully submitted,

5 Jan. 2007
Date

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